

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year)
03 June 1999 (03.06.99)

International application No.
PCT/US98/20499

Applicant's or agent's file reference
AD6521

International filing date (day/month/year)
30 September 1998 (30.09.98)

Priority date (day/month/year)
30 September 1997 (30.09.97)

Applicant

NOZAKI, Masahiro et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
29 March 1999 (29.03.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

F. Baechler

Telephone No.: (41-22) 338.83.38

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference AD6521	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 98/ 20499	International filing date (day/month/year) 30/09/1998	(Earliest) Priority Date (day/month/year) 30/09/1997
Applicant E.I. DU PONT DE NEMOURS AND COMPANY et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☐ Unity of invention is lacking (see Box II).

3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application.

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the **title**, ☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

Figure No. ☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

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PCT/US 98/ 20499

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

Line 1 replace "Polyamine" by "polyamid"

INTERNATIONAL SEARCH REPORT

National Application No
PCT/US 98/20499

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C08L77/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 C08L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 104 436 A (FELDMUEHLE AG) 4 April 1984 see page 11, line 30 - page 20, line 12; claims ---	1-4
X	EP 0 580 387 A (MITSUBISHI GAS CHEMICAL CO) 26 January 1994 see claims: examples ---	1.5
X	EP 0 458 470 A (MITSUBISHI GAS CHEMICAL CO) 27 November 1991 see claims: examples ---	1.2,4
X	EP 0 488 335 A (MITSUI PETROCHEMICAL INDUSTRIES ET AL.) 3 June 1992 see claims: examples ---	1.2,4
	--- -/--	

☒ Further documents are listed in the continuation of box C

☒ Patent family members are listed in annex

Special categories of cited documents

- A¹ document defining the general state of the art which is not considered to be of particular relevance
- E² earlier document but published on or after the international filing date
- I³ document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- O⁴ document referring to an oral disclosure, use, exhibition or other means
- P⁵ document published prior to the international filing date but later than the priority date claimed

T⁶ later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- X⁷ document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- Y⁸ document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- Z⁹ document member of the same patent family

Date of the actual completion of the international search

13 January 1999

Date of mailing of the international search report

25/01/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
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Authorized officer

Boeker, R

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 98/20499

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 532 963 A (BASF AG) 24 March 1993 see claims; examples ---	1,2,4
X	ELLIS T S: "COMMUNICATIONS TO THE EDITOR ON THE MISCIBILITY OF BLENDS OF NYLON 66 AND POLY(HEXAMETHYLENE ISOPHTHALAMIDE), NYLON" MACROMOLECULES, vol. 29, no. 5, 26 February 1996, pages 1836-1838, XP000555560 see the whole document ---	1,2,4
X	H. WANG ET AL.: "MODIFICATION OF NYLON-6 WITH WHOLLY RIDGID POLY(M-PHENYLENE ISOPHTHALAMIDE" JOURNAL OF APPLIED POLYMER SCIENCE, vol. 43, 1991, pages 259-269, XP002089900 see the whole document ---	1,2,4
A	EP 0 735 098 A (UBE INDUSTRIES) 2 October 1996 see claims & JP 08 337718 B cited in the application & JP 09 057789 A cited in the application -----	1-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/20499

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0104436	A	04-04-1984	DE 3232209 A	01-03-1984
			DE 3374530 A	23-12-1987
EP 0580387	A	26-01-1994	JP 6032981 A	08-02-1994
			DE 69306682 D	30-01-1997
			DE 69306682 T	19-06-1997
			US 5412013 A	02-05-1995
EP 0458470	A	27-11-1991	US 5147944 A	15-09-1992
			AU 638120 B	17-06-1993
			AU 7508091 A	21-11-1991
			DE 69116600 D	07-03-1996
			DE 69116600 T	04-07-1996
			JP 4227959 A	18-08-1992
EP 0488335	A	03-06-1992	CA 2056631 A	31-05-1992
			CN 1061984 A	17-06-1992
			DE 69124937 D	10-04-1997
			DE 69124937 T	24-07-1997
			ES 2100923 T	01-07-1997
			JP 2763838 B	11-06-1998
			JP 5009381 A	19-01-1993
			JP 2682921 B	26-11-1997
			JP 5043768 A	23-02-1993
			JP 2636105 B	30-07-1997
			JP 5009382 A	19-01-1993
			KR 9600418 B	06-01-1996
			US 5424104 A	13-06-1995
EP 0532963	A	24-03-1993	DE 4131028 A	25-03-1993
			CA 2078624 A	19-03-1993
			JP 7304948 A	21-11-1995
EP 0735098	A	02-10-1996	JP 8337718 A	24-12-1996
			JP 9057789 A	04-03-1997
			US 5795931 A	18-08-1998

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

NOV 18 1999

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PATENT RECORDS
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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

To:

HAMBY, William, H.
E.I. du Pont de Nemours and Company
Legal Patent Records Center
1007 Market Street
Wilmington, DE 19898
ETATS-UNIS D'AMERIQUE

Date of mailing
(day/month/year)

11. 11. 99

Applicant's or agent's file reference
AD6521

IMPORTANT NOTIFICATION

International application No.
PCT/US98/20499

International filing date (day/month/year)
30/09/1998

Priority date (day/month/year)
30/09/1997

Applicant

E.I. DU PONT DE NEMOURS AND COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

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Authorized officer

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CLS NOTED

11-23-99

MISO




PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AD6521		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US98/20499	International filing date (day/month/year) 30/09/1998	Priority date (day/month/year) 30/09/1997	
International Patent Classification (IPC) or national classification and IPC C08L77/00			
Applicant E.I. DU PONT DE NEMOURS AND COMPANY et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 1 sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input checked="" type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 			
Date of submission of the demand 29/03/1999		Date of completion of this report 11. 11. 99	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel.: +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Ammendola, P Telephone No. +49 89 2399 8662	



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US98/20499

1. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-7 as originally filed

1a as received on 13/09/1999 with letter of 09/09/1999

Claims, No.:

1-5 as originally filed

Drawings, sheets:

1/1 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US98/20499

- ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☒ not complied with for the following reasons:
- see separate sheet**
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
- ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims
	No: Claims 1-5
Inventive step (IS)	Yes: Claims
	No: Claims 1-5
Industrial applicability (IA)	Yes: Claims 1-5
	No: Claims

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US98/20499

Reference is made to the following documents:

- D1: EP-A-0 104 436 (FELDMUEHLE AG) 4 April 1984
- D2: EP-A-0 580 387 (MITSUBISHI GAS CHEMICAL CO) 26 January 1994
- D3: EP-A-0 458 470 (MITSUBISHI GAS CHEMICAL CO) 27 November 1991
- D4: EP-A-0 488 335 (MITSUI PETROCHEMICAL INDUSTRIES ET AL.) 3 June 1992
- D5: EP-A-0 532 963 (BASF AG) 24 March 1993
- D6: ELLIS T S: 'COMMUNICATIONS TO THE EDITOR ON THE MISCIBILITY OF BLENDS OF NYLON 66 AND POLY(HEXAMETHYLENE ISOPHTHALAMIDE), NYLON' MACROMOLECULES, vol. 29, no. 5, 26 February 1996, pages 1836-1838, XP000555560
- D7: H. WANG ET AL.: 'MODIFICATION OF NYLON-6 WITH WHOLLY RIGID POLY(M-PHENYLENE ISOPHTHALAMIDE' JOURNAL OF APPLIED POLYMER SCIENCE, vol. 43, 1991, pages 259-269, XP002089900

Re Item IV

Lack of unity of invention

1.a The features in **common** to **all** the polyamide compositions suitable for welding defined in present claims 1, 2 and 5 are represented by the presence of a polyamide (A) comprising aromatic groups and the presence of a polyamide (B) which is fully aliphatic (see however item "4.b" in this Separate Sheet). All the independent claims define ranges for the weight ratios of (A) and (B), however these ranges are only **partially** overlapping.

Polyamide compositions which are thermoformable (and therefore suitable for welding, see items 2.a and 4.c hereafter) and comprise a fully aliphatic polyamide and an at least partially aromatic polyamide in weight ratio falling in the overlapping portions of all the independent claims are already known from:

- D1: see claims and example 2 and samples "B", "C" and "F" at p.18-20
- D2: see claims and all the examples
- D3: see claims and all the examples
- D4: see claims and all the examples
- D5: see claims and examples 2-16
- D6: see the blends disclosed therein
- D7: see the blends disclosed therein.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US98/20499

Therefore, **three** different inventions may be recognised in the present application:

INVENTION **A**: The compositions according to claim 1.

INVENTION **B**: The compositions according to claim 2.

INVENTION **C**: The compositions according to claim 5.

1.b Even if the applicant had limited claims 2 and 5 (see item "4.a" in this Separate Sheet) by introducing the essential **feature** expressed only in present Claim 1 as to the required minimum molar fraction of aromatic monomer in polyamide (A), still thermoplastic polyanide compositions comprising a fully aliphatic polyamide and another polyamide **with a molar fraction of aromatic monomer of at least 0.2** are already known from:

D1: see claims and example 2 and samples "B", "C" and "F" at p.18-20

D2: see claims and all the examples

D3: see claims and all the examples

D4: see claims and all the examples

D5: see claims and examples 2-16

D6: see the blends disclosed therein

D7: see the blends disclosed therein.

Therefore, even in the case of such amendment, **three** different inventions may be recognised in the present application:

INVENTION **A**: The compositions according to claim 1 but different from those defined in present claims 2 and 5.

INVENTION **B**: The compositions according to claim 2.

INVENTION **C**: The compositions according to claim 5.

1.c The Examining Authority has decided to examine all the 3 inventions in view of the severe lack of novelty of the entire claimed matter.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2.a No evidence has been provided that "for welding" is a **clear** even without indication of the nature of the parts to be "welded". No evidence has been provided that this

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EXAMINATION REPORT - SEPARATE SHEET**

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term **implicitly** defines the required minimum of certain properties.

On the other hand, it must be stressed that the fact that some of the compositions disclosed in the available state of the art are not defined as "suitable for welding" is not **sufficient** to exclude that these known compositions **cannot** be used for welding (in general) at least one material.

On the contrary the skilled artisan expects that any thermoplastic polymer is suitable for any thermoforming technique, including "welding", and therefore that it may be also used to "weld" at least plastic parts of similar composition.

Whether or not the obtained welding is a good or a poor welding depends on the nature of the parts to be welded, but still for any thermoformable polymer is always possible to find some parts which may be welded by thermoforming it.

Therefore, the expression "for welding" is too vague (see after, item 4.a) to provide **any** significative characterizing feature of the claimed compositions.

It is also noted that **no** portion of the independent claims requires explicitly:

- i) any minimum "strength", or
- ii) that the compositions must be a "simple blend" (i.e. excluding the possibility of having compatibility between the two components).

2.b Therefore, the above cited portions of D1-D7 destroy the novelty of claim 1.

Moreover, D1 and D4 destroy also the novelty of claims 2-4, D2 that of claim 5, and D3, D5, D6 and D7 that of claims 2 and 4. Accordingly, the present application does not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of claims 1-5 is not new.

2.c Since **any thermoplastic** polyamide (as any other thermoplast) is always capable to act as "welding" component **at least** for unifying higher-melting or infusible polymer parts (i.e. parts which do not melt at its thermoplastic forming temperature), then, even if the applicant had indicated (see item 4.c hereafter) **in the claims** the nature of the articles which must be welded (e.g. by indicating the pair "polyamides and polyesters" mentioned at p.1/11-12), still this would not render novel the claimed matter.

A wording like, for instance, "for welding polyesters or polyamides" would be considered a distinguishing feature **only** if the applicant had provided experimental evidence or theoretical grounds demonstrating that the polyamides already disclosed of D1-D7 are **not** suitable for welding parts made of higher-melting or infusible polyamide and polyester materials.

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EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US98/20499

In the absence of such evidence, it is observed that the polyamides disclosed in D1-D7 (even those which are **not** explicitly disclosed as suitable for unifying polymer parts) are thermoformable at temperatures at which other polymeric materials (including at least some polyesters and polyamides) are **not** melted. Therefore, each of the polyamides mentioned in D1-D7 is expected to be **suitable** for welding **at least** the higher-melting or infusible **polyester** and **polyamide** parts.

Re Item VIII

Certain observations on the international application

4.a It is evident from the description at p.3/1-10 that it is **essential** that the molar fraction of aromatic monomers forming polyamide (A) is **at least 0.2**. Since independent claims 2 and 5 do not contain this feature, they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

4.b The very fact that the applicant has used the term "aromatic polyamide" to indicate the polyamide (A) which **may comprise** also **aliphatic** monomer units, suggests that **also** the expression "aliphatic polyamide" used for polyamide (B) may include some **aromatic** monomeric units. This would cause an overlap between the definitions of the two components (A) and (B), thereby rendering unclear the amount ranges thereof defined in the main claims.

On the other hand, it is evident from p.4/6-8 and from all the examples that the term "aliphatic polyamide" has been used to indicate **exclusively** the **fully** aliphatic polyamides. This feature should have been expressed **unambiguously** in the **claims** 1, 2 and 5 (see Art.6 PCT and Guidelines III 4.1 and 4.2): for instance by indicating that component (B) is "a **fully** aliphatic polyamide".

4.c It seems that the applicant has used the expression "for welding" as to express an essential feature of the claimed matter. Whether or not a composition is suitable for "welding" **depends** of the nature of the parts to be unified. Therefore, the expression "for welding" is too vague (Art.6 PCT) to provide any characterizing feature of the claimed compositions.

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Several other references pertain to the general field of the invention, see generally EP-A-0 104 436, 4 April 1984; EP-A-0 580 387, Mitsubishi Gas Chemical Company, 26 January 1994; EP-A-0 458 470, 27 November 1991; EP-A-0 488 335, 3 June 1992; EP-A-0 532 963, 24 March 1993; Macromolecules, vo.29, no.5, 26 February 1996, pages 1836 - 1838, XP000555560; and Journal of Applied Polymer Science, vol.43, 1991, pages 259-269, XP002089900. However, these references do not disclose the particular blends of the instant invention and their cited benefits.